

REPORT ON SPRING BARK BEETLE CONTROL WORK

MARCH 4, to MAY 22, 1931

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SEQUOIA NATIONAL PARK
JUNE 10, 1931

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Introduction: From September 17 to October 5, 1930 there was conducted a forest insect survey of the entire Kaweah watershed in Sequoia National Park. The findings and recommendations resulting from this reconnaissance were recorded in a report titled "Forest Insect Conditions, Sequoia National Park, Season 1930". As a consequence of this preliminary work the sum of \$4110.00 was allotted in the 1932 appropriation. Because of the need for prompt action the money was made available the first of March, 1931. In addition to the above amount there was \$616.45 which was held in reserve from the 1931 appropriation. Based upon the 1930 estimates this sum was apportioned as follows:

Area	YP	Cost	SP	Cost	LP	Cost	Total Trees	Total Cost
Marblefork-								
Yucca Creek	90	\$720.00	20	\$200.00			110	\$ 920.00
Middlefork	115	920.00	30	300.00			145	1220.00
Southfork	140	1120.00	25	250.00			165	1370.00
Horse Creek					150	\$600.00	150	600.00
Total based on 1931 estimates							570	\$4110.00
Balance from 1931 F. Y.								616.45
Total amount to be spent								\$4726.45

Description of Work: Because of the mild winter and the early spring the infested areas became accessible unusually early. Consequently, through a request from the Superintendent, Senior Entomologist Miller sent Field Assistants Wagner and Durbrow to the Park to act as spotters for the treating crews. Work was started on March 4, 1931.

Marblefork-Yucca Creek Area.

On March 4, 1931 a crew of nine men was placed in the field upon this area. The personnel consisted of foreman, cook, and seven laborers. Camp was established at the Old Commissary and the burning method was used. When the work was completed in the Marblefork Basin the camp was moved to Colony Mill as a base for work in the Yucca Creek area. Both camps were accessible by road so that supplies were carried by truck. This project was completed on April 23.

Number of trees treated:

	Y P	S P	Both species
Marblefork-----	39	11	50
Yucca Creek-----	22	3	25
Total treated	61	14	75

The costs of the project were as follows:

Labor	\$1328.95
Supplies	53.74
Surcharge on supplies	2.54
Truck operation and rental	101.67
Meals furnished at messes	28.00
Total cost	\$1494.90

Number of trees cut---75

Total cost of control***\$1494.90

Cost per tree---\$19.93

Comparison of estimates with actual operation:

	<u>No. of trees</u>	<u>Total cost</u>	<u>Cost per tree</u>
Estimated	110	\$920.00	\$8.37
Actual work	75	1474.90	19.93
Difference	35	\$554.90	\$11.56

Middlefork Area.

On March 17, 1931 a crew of fourteen men was placed in the field. This party was composed of camp foreman, cook, cook's helper, spotter, and ten laborers. Camp was established at Mehrten Creek during the entire project, and was accessible by five miles of trail. For this reason a packer with six head of pack stock was maintained at the trail head. The burning method was used.

The work on this area terminated on April 18 but it was not finished. Unusually warm weather and low humidity made burning so dangerous and costly that work was stopped while 21 trees were left untreated. Although unusual care was exercised in burning, on April 2 a sudden gust of wind threw a spark which resulted in a nine acre forest fire. As a result of this incident practically two entire days were lost, the fire lines around treated trees were considerably widened, and pack pumps were added to the equipment. The cost of operation was consequently increased.

Number of trees treated:	Y P	S P	Total treated
	97	1	98

The costs of the project were as follows:

Labor	\$1864.06
Supplies	31.42
Forage and corral expense	77.87
Surcharge on supplies and forage	7.56
Truck operation and rental	31.24
Total cost	\$2012.15

Comparison of estimates with actual operation:

	<u>No. of trees</u>	<u>Total cost</u>	<u>Cost per tree</u>
Estimated	145	\$1220.00	\$8.41
Actual work	98	2012.15	20.53
Difference	47	\$ 792.15	\$12.12

Southfork Area.

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Southfork Area.

On March 27 and 28 Field Assistant Wagner of the Bureau of Entomology and the acting Park Forester made a survey of the Southfork watershed. On March 30 the same men examined the Horse Creek area. As it had been determined that funds were not adequate to complete all four projects, it became necessary to decide upon the elimination of one. From both the entomological and Park development considerations, it was decided to apply the work to the Horse Creek area, as this region of almost pure lodgepole pine was more seriously exposed than the yellow pine in the Southfork.

Horse Creek Area.

On May 1, 1931 a crew of eleven men was taken into this area. Storms the latter part of April prevented entering this territory immediately after the completion of the other projects. The Party was composed of camp foreman (who also acted as spotter), cook, and nine laborers. As the camp was established at Horse Creek, which is accessible by $8\frac{1}{2}$ miles of trail, it was necessary to maintain a packer and six pack animals at Atwell Mill, the nearest road point. The work was terminated on May 22 but it was not completed as the depletion of funds made necessary the leaving of 29 trees untreated. Because there was snow on the ground, the burning method was used and the solar method was not attempted.

Number of trees treated:

	L P	Mt P	Total
Horse Creek	255	4	259
Hockett Meadow	31		31
Total Treated	286	4	290

The costs of the project were as follows:

Labor	\$ 975.75
Supplies	5.09
Forage and corral expense	81.52
Surcharge on supplies and forage	5.59
Truck operation and rental	15.80
Total cost	\$1083.75

Total number of trees cut---290

Total cost of control-----\$1083.75

Average cost per tree-----\$3.74

Comparison of estimates with actual operation:

	No. of Trees	Total Cost	Cost per tree
Estimated	150	\$ 600.00	\$4.00
Actual Work	290	1083.75	3.74
Difference	140	\$ 483.75	\$.26

Statement of Costs for Entire Project:

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Classification of Expense	Middle Fork	Marble Fork	Horse Creek	Field Inspection Trips
Labor	\$1864.06	\$1328.95	\$ 75.75	\$ -
Supplies	31.42	33.74	5.09	5.19
Forage and corral expense	77.87	-	81.52	-
Surcharge on supplies and forage	7.56	2.54	5.59	.39
Truck operation and rental	31.24	101.67	15.80	-
Meals furnished at messes	-	28.00	-	-
Stock rental	-	-	-	12.00
Totals	\$2012.15	\$1494.90	\$1085.75	\$17.58

Total amount to be spent \$4726.45
Total amount spent 4608.38
Amount remaining for 1931 insect survey \$ 118.07

Total number of trees treated and cost per tree:

Marblefork-Yucca Creek--- 75 Trees

Middlefork----- 98 "

Horse Creek-----290 "

Total treated-----463 Trees

Total cost of entire project**\$4608.38

Average cost per tree-----\$9.95

Conclusion and Recommendations: A study of the figures set forth in this report clearly indicate a wide divergence between the estimates and the actual operation. As this difference will naturally arouse question, the following explanations are given.

In the Marblefork-Yucca Creek Area there was estimated to be 110 trees requiring treatment. Actually 75 trees were treated. The area included in the estimate extended to the region between Crystal Cave and Sawanee River. While the work was in progress it was decided to eliminate this region as it was remote and the infested trees quite scattered. Work was therefore concentrated upon the most accessible places and those visible from the G General's Highway. Because of the unfavorable burning conditions the work was rushed. For this reason it is quite possible that infested trees were overlooked.

Had the work been completed according to the area in the estimate and under more normal working conditions, undoubtedly the number of trees treated would have been greater than the estimate. It is therefore safe to conclude that there are 35 to 50 trees remaining in the area that should be cut and burned.

On this area it was estimated the cost per tree would be \$8.37. The actual cost was \$19.93 per tree*-more than twice as much as the estimated cost. The preparation of estimates, however, was based upon control projects conducted in other parts of the state where the topography and general working conditions are much easier than in the rugged deeply cut

terrain which characterizes the forested areas of this Park. This steepness of topography together with a brushy ground cover introduced working conditions that were not seriously considered in the estimates. These factors added to the extreme fire hazards which resulted from a combination of steep slopes, brushy ground cover, and low humidity naturally increased the costs above even a normally higher cost than the estimates.

To top the above adverse considerations, the inexperience of the men must be considered. The men employed were as closely as possible limited to men who had worked in the Park before and who would be available for future beetle control projects. Rather than employ men of a transient character it was considered more practical to ~~employ~~ train men who would be available each year, thereby insuring a steadier type of trained man for future projects.

Summary of conditions tending to increase costs:

1. Extreme steepness of slopes
2. Brushy character of ground cover
3. Unusually low humidity
4. Inexperience of men

For the Middlefork Area the same arguments will apply. 145 trees were estimated for the area, 98 were treated, 21 were left because of extreme fire conditions. This indicates that about 26 trees were overlooked, or that according to the estimate about 47 trees were left standing that should have been treated.

The pictures included in this report will clearly illustrate the type of country making up the Marblefork-Yucca Creek and Middlefork areas.

In the Horse Creel Area, the bark beetle control work revealed a much heavier infestation than the survey indicated. This fact proved the importance of attacking the situation without delay as an epidemic was building up that might have swept through the prime lodgepole stand on the Park, thereby leaving an ugly scar in an area which is to be developed into an unusually attractive camp ground.

The fact that the estimated cost per tree was greater than the actual cost indicates that the men were becoming more experienced and that a normal working chance tends toward lower operation costs.

A perusal of the above facts and figures reveals two outstanding facts, namely, a high control cost in the yellow pine type and that each area was not entirely completed because of a combination of difficult working conditions and inadequate funds.

In order that the work already accomplished shall not have been done in vain and to insure that the areas treated will be entirely safeguarded against serious bark beetle depredations, it is sincerely urged that funds be made available to carry-on this progressive and constructive work. Although it was deemed necessary to postpone the Southfork Project, this area should be included in the insect appropriations for the 1933 fiscal year.

Recommendations for future control work with estimates and reasons therefore are being set forth in another paper as a "Statement of Estimates".

Respectfully submitted

Frank Keen
Acting Park Forester



Yellow pine tree prepared for burning.
Note width of fire line--axe 3 ft. long.



Yellow pine after burning. Note steepness of slope and earth thrown overtreated tree.



Typical yellow pine-black oak type. Note brushy ground cover and pitch of slope



Manzanita thickets common to the areas treated.
Wide strips had to be cut through these before
burning.



General view showing character of country.
Note numerous ~~steep~~ steep ridges and
ravines, and brush ground cover.